



# PATENT SPECIFICATION

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## COMPLETE SPECIFICATION.

### Improvements in the Manufacture and Production of Finely Divided Solid Materials.

I, JAMES YATE JOHNSON, a British subject, of 47, Lincoln's Inn Fields, in the County of London, Gentleman, do hereby declare the nature of this invention (which has been communicated to me from abroad by I. G. Farbenindustrie Aktiengesellschaft, of Frankfurt-on-Main, Germany, a corporation organized according to German laws), and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement:—

My foreign correspondents have found that solid materials other than indigoid vat dyestuffs, which are not of animal or vegetable origin, can be advantageously produced in a finely divided state by mixing these materials with aromatic sulphonic acids containing hydrocarbon side-chains, substantially in a dry state and grinding the dry mixture. For example, excellent results are obtained with these sulphonic acids in dispersing inorganic or organic pigments, soot, sulphur, heavy spar and other mineral or artificial materials in the dry state. The products thus obtained are to a large extent in very fine subdivision and are excellently suitable for the manufacture of colour lakes printing colours and the like, as they possess a high colouring power by reason of their fine subdivision.

As stated above, aromatic sulphonic acids containing hydrocarbon side-chains are suitable for the purpose of the present invention; they may be used either as free acids or in the form of salts; the hydrocarbon side chains in the said sulphonic acids may be open, for example ethyl, propyl, butyl, or other radicals, or rings as for instance in the sulphonic acids substituted by cyclohexyl and similar radicals, or they may link together two hydrocarbon residues; the sulphonic acids may contain one or

several of such side chains. The presence of hydrocarbon side chains in the form of alkylated amino groups as substituents is also very efficient. As examples of compounds especially suitable for the said purposes, propyl and butyl derivatives of naphthalene sulphonic acids, also dimethyl metanilic acid, diamyl-alpha-naphthylamine sulphonic acid and similar compounds, or their salts, may be mentioned. Condensation products of sulphonated phenols, or naphthalene and formaldehyde may also be used. The efficiency of the said aromatic sulphonic acids is further increased when they are employed in conjunction with Turkey red oil or other similar sulphonated oils.

The following examples will further illustrate how the said invention may be carried out in practice, but the invention is not limited to these examples. The parts are by weight.

#### EXAMPLE 1.

5 parts of lithol fast scarlet B in powder (see Schultz Farbstofftabellen, 1923, vol. 1, No. 78) are mixed with 0.25 part of isopropylated naphthalene sulphonic acid sodium salt and ground in a substantially dry state with 100 parts of heavy spar. The pigment colour so obtained is distinguished from a product prepared without an addition of the said sulphonic acid by an extremely fine dispersion and by a superior colouring power.

#### EXAMPLE 2.

80 parts of the orange-red pigment colouring matter prepared in the usual manner from diazotised 2,4-dinitro-aniline and beta-naphthol are intimately ground with 8.8 parts of isopropylated naphthalene sulphonic acid sodium salt and 5 parts of the sodium salt of sul-

phonated castor oil (of 50 per cent. strength). The resulting product, the shade of which is slightly more yellowish than that of the initial material, has a much greater colouring power than the latter.

In the above examples, any other alkylated, for example, a butylated sulphonic acid or a salt thereof or other sulphonic acids substituted by a hydrocarbon side chain as mentioned above, may be employed instead of the isopropylated naphthalene sulphonic acid sodium salt.

I am aware of Specifications Nos. 224,077 and 224,925 and make no claim to anything described or claimed therein.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A process for the manufacture and production of finely divided solid mineral or artificial materials other than indigoid vat dyestuffs characterised by the same being mixed with an aromatic sulphonic acid substituted by a hydrocarbon side chain, or a salt thereof, sub-

stantially in a dry state and the dry mixture being ground alone or in conjunction with Turkey red oil or other similar sulphonated oil.

2. A process for the manufacture and production of finely divided solid mineral or artificial materials other than indigoid vat dyestuffs characterised by the same being mixed with a naphthalene sulphonic acid substituted by one or more hydrocarbon radicals containing more than two carbon atoms or a salt thereof, substantially in a dry state and the dry mixture being ground alone or in conjunction with Turkey red oil or other similar sulphonated oil.

3. The process of producing finely divided solid materials substantially as described in each of the foregoing examples.

4. Finely divided solid materials when produced in accordance with the preceding claiming clauses.

Dated this 12th day of April, 1926.

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